WHAT IS CLAIMED IS:

1. An encoder for measuring the position of a surface, said encoder comprising:

a first array of n photodetectors, where $n>1$, each photodetector being characterized by a width d_1;

a first code strip imaging system for generating an image from a first code strip attached to said surface on said first array, said image comprising alternating dark and light stripes, said stripes having a width of D_1, said dark stripes having a lower luminosity than said white stripes, wherein $nd_1=D_1$, said code strip image moving in a first direction with respect to said first array, said distances d_1 and D_1 being measured in a direction parallel to said first direction;

a second array of n photodetectors, each photodetector being characterized by a width d_2; and

a second code strip imaging system for generating an image from a second code strip attached to said surface on said second array, said image comprising alternating dark and light stripes, said stripes having a width of D_2, wherein $nd_2=D_2$, said code strip image moving in a first direction with respect to said first array, said distances d_2 and D_2 being measured in a direction parallel to said first direction, wherein $d_1=nd_2$.

2. The encoder of Claim 1 further comprising a plurality of detector circuits, each detector circuit converting a light intensity signal from a corresponding one of said photodetectors to a channel signal that switches between first and second logic states when said code strip moves relative to said array.

3. The encoder of Claim 2 further comprising a decoding circuit for receiving said channel signals and generating a digital signal that increases monotonically with the position of said code strip relative to a reference point.

4. The encoder of Claim 2 wherein said first array of n photodetectors further comprises a complementary array of n photodetectors, each photodetector in said complementary array being characterized by a width d_1, said complementary array of photodetectors being positioned relative to said first array of photodetectors such that each photodetector in said complementary array of photodetectors generates a light intensity signal that is a complement of said light intensity signal generated by a corresponding one of said photodetectors in said first array.